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THE PREPARATION OF TINCTURE OF STROPHANTHUS.

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In view of the opinion expressed by several observers that the tincture of strophanthus has been of variable activity, and also considering the present dependence of the retail pharmacist upon the large manufacturing houses for standardized tinctures, the following investigation has been undertaken to devise a means whereby the retail pharmacist can prepare the standardized tincture of strophanthus, and thus give his own guarantee for the drug which he dispenses. The subsidiary objects connected with such an investigation, such as the determination of the activity of the seed of commerce, the influence of defatting the seeds previous to percolation, the activity of the fixed oil thus obtained, and comparison of the standardized tinctures now on the market with tinctures made by fully exhausting the commercial seed, are dealt with briefly.

The introduction of the drug was due to Pelikan's work on the action of strophanthus, and most of all to the pharmaceutical and pharmacological studies of Thomas R. Fraser, of the University of Edinburgh, following the discovery of the drug during Livingstone's expedition to the Zambesi. From the time Pelikan's article [1] appeared in 1865, until 1890 and later, Fraser,[2] Wm. Elborn,[3] Van Hasselt,[4] Baillon,[5] Hardy and Gallois,[6] Martindale,[7] and others worked out the botany, chemistry and therapeutics as well as they

could with the impure specimens in their possession. Fraser's article on the glucoside, strophanthin, appeared during 1885 in the *British Medical Journal.* Fraser had previously isolated the active principle but had not discovered its chemical character, and Hardy and Gallois had ascribed to their "strophantine" chemical characteristics which it did not possess.

All observers agreed that the seeds contained more of the active principle than any other part of the plant. Tinctures of various strengths were advised, and it was found that defatting the seeds materially aided percolation, although some observers thought that the defatted tincture was weaker than one not so prepared. Fraser and Martindale[7] proved that the active principle was practically insoluble in ether, and that the defatted tinctures were therefore of the same strength as those not defatted. Most of the investigations during this period (1865–1890) were obscured by confusion as to the botany of strophanthus, and by the impossibility of obtaining pure specimens. To Oliver, of Kew, and especially to E. M. Holmes,[8] is due the credit of differentiating the various species, and to the latter also is due great credit for insisting that pure seed be imported. Finally, in 1906, Holmes announced that the seeds coming into England were to be relied upon.

Gilg, Thoms and Schedel[10] worked out the botany, chemistry, and therapeutics of *Strophanthus gratus* which contains a glucoside more active than the official strophanthin.

From among the various species, *S. Kombé* (of which *S. hispidus* is probably a climatic variation) has gained the widest use.

For the purpose of this investigation a supply of strophanthus seed* in No. 60 powder, "ground for percolation," was obtained from Gilpin, Langdon & Co. This was thoroughly mixed and used in several portions for the preparation of tinctures as follows:

Five portions of 100 grammes each were prepared as the Pharmacopœia directs, macerated with the menstruum (about 65 per cent. alcohol) for 48 hours; percolated at different rates with intervals of maceration; and the tinctures thus prepared were tested in the manner to be described presently.

Tincture No. 1 was made with 58 hours of percolation and 442 hours of maceration in about 22 days.

Tincture No. 2 was made with 718 hours of percolation and

*This was labelled *S. hispidus.* The Pharmacopœia directs that *S. Kombé* be used, but the action of the two is qualitatively the same.

339 hours of maceration in about 47 days; reserved in two equal portions.

Tincture No. 3 was made with 35 hours of percolation and 275 hours of maceration in about 12 days.

Tincture No. 4 was made with 164 hours of continuous percolation, after the 48 hours of maceration as directed by the Pharmacopœia. The percolate was reserved in six portions.

Tincture No. 5 was made with 169 hours of percolation and 56 hours of maceration in about 9 days. The percolate was reserved in ten portions of 100 c.c. each.

One hundred grammes of the powdered seed were thoroughly exhausted with petroleum ether in a Soxhlet extractor. Twenty-eight grammes of fixed oil were thus obtained, and the marc after drying weighed 68 grammes, the loss in moisture being four grammes.

The fat-free powder was divided into two parts of 34 grammes each representing 50 grammes of seed, and percolated as follows:

Tincture No. 6. The 34 grammes of fat-free powder were moistened and macerated for 48 hours, as directed by the Pharmacopœia, using about 65 per cent. alcohol as menstruum. Five hundred cubic centimetres were obtained after 9.5 hours of percolation, interrupted once by 22 hours of maceration.

Tincture No. 7. The 34 grammes of fat-free powder were moistened and macerated for 48 hours, using a menstruum of about 25 per cent. alcohol. Five hundred cubic centimetres were obtained after 10 hours of percolation, interrupted once by 22 hours of maceration.

Owing to the want of a practical method of quantitative chemical analysis for strophanthin, these tinctures were tested by subcutaneous injection into cats. It has been shown in this laboratory that strophanthin can be quantitatively determined fairly accurately by defining the minimal lethal dose thus injected. This is about two-sevenths of a milligramme injected subcutaneously per kilo of cat for the commercial strophanthin of Merck and of Boehringer and Sons, which is the official strophanthin.

One hundred grammes of the seed were percolated until exhausted, and the tincture thus obtained tested on cats showed that one gramme of the seed would suffice to kill 350 kilos of cat, and therefore contained about 100 milligrammes of commercial strophanthin. At least, this seed may be safely stated to contain the toxic equivalent of about 10 per cent. of commercial strophanthin.

Several samples of standardized tinctures made by the large manufacturing houses were tested in the same way, and their toxicity indicated that they contained only 7.1 milligrammes of commercial strophanthin per cubic centimetre, or less than 80 per cent. of that in an equivalent amount of a 10 per cent. tincture which fully represented the seed used in the above experiments (10 milligrammes).

There is nothing in the literature which justifies the claim of such a high percentage of strophanthin as these experiments indicate. Yet we must insist that there is the toxic equivalent of about 10 per cent. of commercial strophanthin in the seeds which were used. Whether the former analyses depending upon chemical reactions have been inaccurate, whether the seeds used have not been of the same strength, or whether there exists in the seed some substance having a synergistic action,—these considerations must be left for future investigations. That the physiological method of estimating toxicity is sufficiently accurate for practical purposes has been proved.*

The following statements are based upon more than sixty experiments, all upon cats, by which the minimal lethal dose has been determined for each tincture.

Tincture No. 1 fully represented the seed.

Tincture No. 2. The first half, obtained by 145 hours of percolation and 339 hours of maceration, contained 85 per cent. of the active principle, and the second half 15 per cent.

Tincture No. 3 fully represented the seed.

Tincture No. 4 was about 20 per cent. weaker than No. 5. The curve of percolation is given below.

Tincture No. 5 fully represented the seed. As compared with No. 4, it is evident that these two percolations are on either side of

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* A *cat-unit* is the minimal lethal dose by vein per kilo of cat. If the injection be made subcutaneously, then the minimal lethal dose will be somewhat greater (about one-fourth greater) (Hatcher and Bailey[11]).

Injections should be so diluted that the dose can be easily measured. If one-half cubic centimetre or more of an alcoholic tincture is to be tested, the alcohol should be evaporated.

The *accuracy* of this method of standardization may be judged from the following experiment. The toxicity of the six portions of tincture No. 4 were separately determined, and the results added together. Then one-tenth of each of the six was taken, these were mixed, and the resulting mixture tested. The error was less than 10 per cent.

the line between complete and incomplete exhaustion, and that the five hours more of percolation and the eight hours more of maceration, together with the fact that No. 5 was slightly more firmly packed, suffice to make a difference of 20 per cent. This illustrates how easily one may fail to completely exhaust the seeds.

Tincture No. 6 was found to contain 80 per cent. of the active principle in 50 grammes of the seed. It is therefore evident that defatting the seeds aided materially in percolation, for we found that, unless the oil was first removed, 75 hours of percolation and maceration would not extract even 80 per cent. of the active principle.

Tincture No. 7 fully represented the seed. The defatting and reduction in the percentage of alcohol in the menstruum was sufficient to give a thoroughly exhausted marc.

A statement has been widely circulated in medical literature to the effect that the emetic action of strophanthus is due to the fixed oil, and that fat-free tinctures are therefore devoid of such action. The experiment detailed below proves the incorrectness of this claim.

A 5 per cent. emulsion of the oil obtained in preparing tinctures Nos. 6 and 7 was made, and one cubic centimetre per kilo was given by *stomach-tube* to a cat. No emesis occurred and the animal remained normal for several days, although it had received the fat content of several times the *fatal* dose of seed.

On the other hand, a suitable dose of the fat-free tincture, made from the residue in the Soxhlet extractor (Nos. 6 and 7), injected *subcutaneously* produced prompt emesis.

The following conclusions are, we believe, justified from the facts given above:

1. The active principle of strophanthus is slowly extracted by the menstruum of the Pharmacopœia (about 65 per cent. alcohol), more rapidly by a menstruum having a lower percentage of alcohol. The latter makes an unsightly tincture, which may be cleared by chilling (ice and salt), and filtering while cold.

2. Defatting the seeds aids percolation, does not affect the strength of the tincture, and does not in any way eliminate the emetic action of the drug.

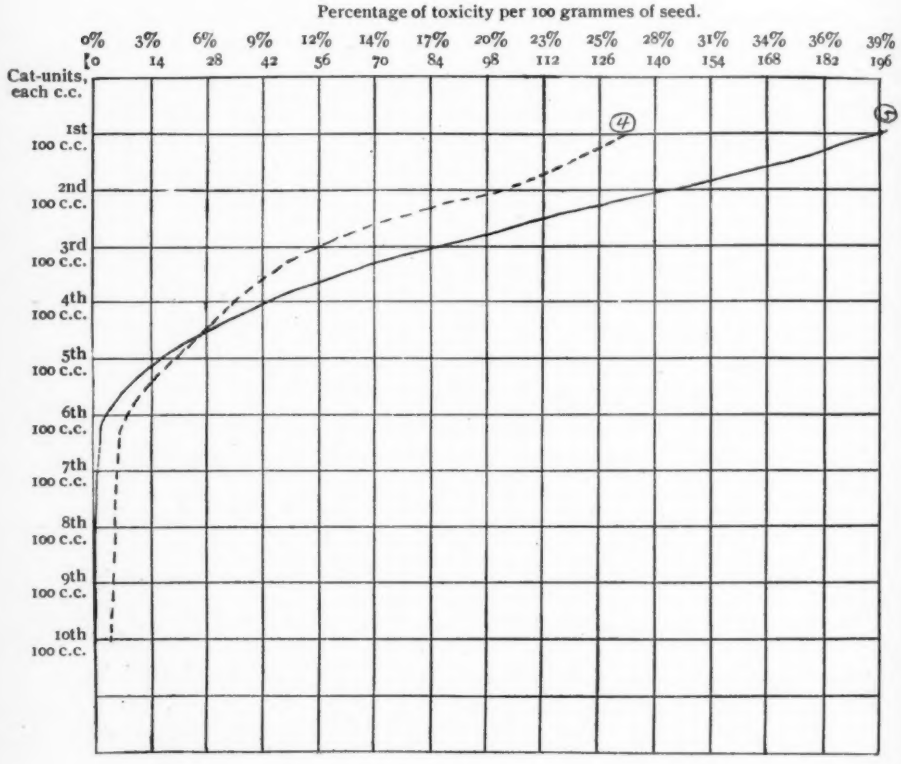
3. For percolation, the moistened seeds should be firmly packed in a long, narrow percolator.

4. Tincture of strophanthus, when made in small quantities, requires at the very least seven days of percolation with 1000 c.c.

of menstruum for each 100 grammes of seed; and to be sure of exhaustion, in addition, there should be several periods of maceration of at least eight hours each.

5. The minimal lethal dose of such a tincture should be between one-thirtieth and one-thirty-fifth of a cubic centimetre per kilo of cat, injected subcutaneously (*i.e.*, about forty cat-units per cubic centimetre).

CURVE OF PERCOLATION OF TWO TINCTURES OF STROPHANTHUS.
No. 4 and No. 5.



6. To insure uniformity in the strength of the tincture, the strength of the seed should be constant. This may be easily determined by the wholesale house. Pharmacists should demand standardized seeds of the strength indicated by about 400 cat-units (see foot-note, p. 212) per gramme of seed.

At least two observers have stated that the seeds, or the alcoholic extracts of the seeds, are made much more toxic by aqueous maceration. Experiments conducted in this laboratory are not in accord with this statement, for we know that the glucoside loses in toxicity when the aqueous solution is allowed to stand.

I wish here to express my indebtedness to Dr. Robert A. Hatcher for suggesting this investigation, and for assistance during its execution.

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A NEW METHOD FOR THE CHEMICAL ASSAY OF ERGOT.

A PRELIMINARY COMMUNICATION.

By Horatio C. Wood, Jr., M.D.
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While engaged in working on the physiological standardization of ergot I was struck by the fact that a fluid extract which had been found to be completely inert physiologically gave almost no precipitate on the addition of water. This observation suggested to my mind the possibility of there being some relation between the physiological activity of ergot and the amount of resin it contained. Accordingly I made a rough test to discover the possible truth of this idea on four fluid extracts; I took 10 c.c. of fluid extract, added

20 c.c. of water, filtered off the precipitate on a weighed filter, washed with a small quantity of water, dried in a thermostat and weighed. The results were as follows:

Preparation.	Physiological Test.[1]	Weight of Precipitate.
1	0	14
2	10	48
3	10	68
4	21	96

While these figures cannot be expected to give accurate information, they were nevertheless suggestive enough to encourage further investigations on this point.

The following method was then tried:

To 10 c.c. of fluid extract add 20 c.c. of water; shake out with repeated portions of 10 c.c. each of benzole until the benzole after shaking remains colorless. Unite the various portions of benzole and evaporate in a tared dish on the water bath, dry in a thermostat at a temperature of 40° C. until the weight is constant, and then weigh. Eleven fluid extracts were assayed in this manner besides several other galenicals prepared from ergot. The results as compared with the results of the physiological tests of the same preparations are shown in Table 2.

Preparation.	Physiological Test.	Per cent. Benzole Extract.
A1.	33	0.68
B1.	32	0.58
C.	21	0.58
D.	30	0.52
E1.	22	0.48
F.	20	0.45
G.	15	0.42
A2	13	0.39
B2.	10	0.37
E2.	12	0.34
H.	6	0.27
I.	0	0.09
J.	0	0.06

Especial attention may be called to the samples denominated in this table: A1 and A2, B1 and B2, and E1 and E2. Each pair

[1] The figures in the column "physiological test" were obtained by the method described by Dr. Hofer and myself in the *University of Pennsylvania Medical Bulletin*, February, 1909.

of these were from the same fluid extract; those marked 1 had been kept in a hermetically sealed bottle and retained their original potency, while those marked 2 had been exposed to the air and had lost much of their power. It will be noted that in each case the percentage of benzole extractive diminished as did the physiological activity.

Further evidence that the benzole extracts the greater portion of the active principle of ergot in an approximately pure condition is found by comparing the dose of the resultant extractive required to produce a certain amount of physiological effect with that which should be theoretically necessary. For instance, it was found that 0.00061 Gm. per kilo of the extract caused a rise in the blood-pressure of 10 mm., and that 0.00105 Gm. caused a rise of 32 mm. Now fluid extract B2, which in doses of 0.17 Gm. per kilo gave a rise of 10, contains 0.37 per cent. extractive so that there was in the dose given 0.00063 Gm. as the theoretical requirement to compare with the figures 0.00061 found experimentally. Sample B1 gave a rise of 32 in doses of 0.16 Gm. per kilo, and contains 0.58 per cent. extractive; therefore we have a theoretical dose of 0.00093 as compared to that found experimentally of 0.00105.

On the other hand, it must be confessed that the residue left behind after extraction with benzole was not inert, that is, the benzole had not completely exhausted the drug; and no amount of shaking out nor any other treatment with this solvent was able to remove entirely its activity. Evidently there is a second principle, perhaps an alkaloid, which is not dissolved by the benzole. But I do not think this fact disproves at all the practical value of the method of assay; no one claims that morphine is the sole active ingredient of opium, nor that the brucine in nux vomica is inert and the marc after the assay in each of these cases must be physiologically active.

Now a few words as to the nature of the body extracted by the benzole. It was a golden-yellow resin-like mass soluble in ether, alcohol, acetic ether, and benzole; insoluble in petroleum ether, water, or dilute acids, but readily soluble in solutions of the hydroxides apparently with chemical change. It is precipitated from alkaline solution by acids, from its ethereal or benzole solution by petroleum ether or sodium hydroxide. When boiled with the sodium hydroxide in a porcelain dish a cherry-red color appears around the edge of the solution and the solution itself changes from a golden-yellow to a reddish-brown. When kept for some time the

substance seems to undergo a similar change spontaneously with a loss of physiological power. The solution in dilute alcohol turns green if exposed to the air.

These properties coincide with those ascribed by Jacobi (*Arch. fur Exper. Path. und Pharm.*, 1897, 39) to a body whose existence he deduced on theoretical grounds but which he appears to have actually separated only in the most minute quantities and to which he gave the name of Sphacelotoxin.

I hope later to publish a more detailed description of this body and its properties as well as to offer some suggestions concerning the other physiologically active ingredients of ergot. I wish here to express my thanks to the firms of E. R. Squibb and Sons, to Mr. J. W. England of Smith, Kline and French, and to Mr. C. E. Vanderkleed of the H. K. Mulford Co. for their kindness in obtaining the crude material for my study, and their other courtesies.

A METHOD FOR THE DETECTION OF SMALL QUANTITIES OF CAPSICUM IN GINGER ALE AND OTHER PREPARATIONS OF GINGER.

By Charles H. LaWall.

In 1907, Garnett and Green published in the *British and Colonial Druggist* a method for the detection of capsicum in preparations of ginger which gives fairly good results as described, and which has been taken as a basis for the following method in which the sensitiveness is materially increased:

The contents of a bottle of ginger ale, measuring usually about 250 c.c., are emptied into a large beaker and the carbon dioxide driven off by pouring from one beaker to another or by gently heating for some time on a water bath. The liquid is then transferred to a large separatory funnel and slightly acidulated with diluted sulphuric acid, then agitated for one minute with 50 c.c. of ether. The ether is removed, evaporated spontaneously and the residue is weighed. If the residue weighs 10 milligrammes or less, 2 c.c. of one-half normal alcoholic potassium hydroxide solution are added, the residue dissolved and the liquid transferred to a test-tube. If the residue weighs more than 10 milligrammes, add 1 c.c. of one-half normal alcoholic potassium hydroxide solution for each additional 10 milligrammes of residue. After transferring this

alkaline solution of the residue to the test-tube, insert a perforated cork bearing a glass tube about 1 m. long, to serve as a reflux condenser, stand the test-tube in a beaker of water upon a water bath (supporting the tube by a suitable apparatus stand), and maintain the temperature at a degree sufficient to cause a gentle ebullition of the alcoholic solution for thirty minutes. Remove the stopper and glass tube and continue the heat until the alcohol is evaporated and the residue in the test-tube is nearly dry. Add water to fill the test-tube half full, agitate to dissolve the saponified residue, add an amount of ether equivalent to one-half the volume of the aqueous solution and again agitate thoroughly. After the ethereal solution has separated, draw it off by means of a pipette, transfer to a clean dry watch glass and allow it to evaporate spontaneously. After the evaporation of the ether taste the residue upon the watch glass. Capsicum is indicated by a sharp pungency as soon as the tip of the tongue touches the residue. When large quantities of ginger are used a slight camphoraceous taste is observed, but there is never any pungency unless capsicum is present.

This method has been tried under varying conditions upon several hundred specimens of known origin and has never failed to indicate capsicum when present, nor has there been any difficulty in distinguishing the residue left from pure ginger preparations. Experiments upon quantitative mixtures have shown that it is easily possible to detect one part of capsicum in 10,000 parts of water, which is equal to one pound of capsicum in 600 gallons of ginger ale.

The method is applicable to any other preparation of ginger by driving off the alcohol, if present, diluting with water, acidulating and shaking out, as in the foregoing method.

THE PROGRESS OF THE PURIFICATION OF THE DRINKING WATER IN PHILADELPHIA.*

By William George Toplis.

It is our great good fortune to live in the sublime old Commonwealth of Pennsylvania. We are justly proud of our citizenship in the chief city of this grand old State, notwithstanding the fact that it has lately become the practice of some irresponsible sensationalists to slander and villify her fair name. I have wondered why her people seemed so passive under the lash. The spirit of nonresistance characteristic of her illustrious founder still remains to counsel patience while waiting for a proper reply to these wanton and scandalous attacks. We have at last an answer in thundering tones, an answer of splendid deeds to refute the frantic utterances of baseless charges and empty words. The filtration and purification of our water supply is now a fact, pouring out its inestimable blessing of two hundred gallons of clarified, purified, and wholesome water to each individual every day. Fourteen hundred gallons every week for less than one cent. Seventy thousand gallons every year to each one for thirty cents. That is what filtration costs us.

Before entering upon a description of the work, it is perhaps best to make a brief explanation of the fundamental principles underlying the system used in purifying a city's water supply. Water contamination may first be divided into two great classes, soluble and insoluble. Soluble contamination may again be divided into two classes, namely, inorganic or mineral substances, and organic substances by which is meant such materials as are produced by the life process of plants or animals. It is plain to every one that substances in suspension may be removed from water by any well-conducted straining process. It is equally plain that substances in solution are not removed by any such means, but remain unchanged in such a filtrate. As stated, two kinds of soluble contamination exist, mineral and organic. Of these the mineral contamination plays but little if any part as a harmful factor in the health of the community. The elimination of the disease producers is the prime consideration in municipal water purification plans. Therefore from this point of view the presence of ordinary mineral

* An address delivered at the Philadelphia College of Pharmacy, April 20, 1909.

contamination is ignored. This leaves then, for our consideration, the soluble organic matter. It may be said by way of illustration that this matter is entirely represented, from every source, by four elements, namely, carbon, hydrogen, oxygen, and nitrogen. How to remove this matter was the problem, and it remained to the science of bacteriology to point the way. When dead organic matter is exposed to proper influences it begins to decay at once. This decay is brought about by the growth in the organic matter of minute vegetable organisms, bacteria. The products of this decay, when the decomposition is effected in the presence of oxygen, are the simple oxides of the elements that enter into the original material; that is, carbon becomes carbon dioxide; hydrogen becomes oxidized to water; and nitrogen first becomes ammonia, which is finally oxidized to nitric acid or its compounds. It had long been known that when water is allowed to slowly percolate through a bed of sand its chemical character is improved. The reasons for this were not understood until after bacteriology was placed on a scientific basis by the discoveries of Koch, and later by many others. Then it was found that in a filtering bed of sand each grain of sand became coated with a zoogloœa of bacteria. The arrangement of a filtering bed of sand is such that it forms innumerable avenues through which water passes very slowly, carrying the organic matter in solution, together with dissolved oxygen. The organic matter becomes food for the bacteria living within the filter bed attached to the grains of sand. The chemical analysis of water so treated shows a distinct change from that which was applied before filtration and proves the theory to be correct. This, then, is the plan underlying the great water purification project of the city of Philadelphia, around which is clustered so much of vital importance to her million and a half of people.

The very first treatment in the purification of water is that of sedimentation. This is accomplished in a large basin open to air and sunlight. The storage capacity is equal to about forty-eight hours' supply. The basin is divided into two equal parts by a heavy, broad earth and concrete partition. This operation includes some very ingenious handling. Raw water is entered at the bottom and at the far side of basin No. 1. The outlet of No. 1 is through a floating drum, which is attached to a large pipe, hinged at the bottom of the reservoir to the large main that conducts the water to the far side of basin No. 2. In this basin is another floating drum

hinged to the pipe that supplies the raw water after sedimentation to the preliminary filter. Both of the floating drums are located at the near side of their respective basins and their function is to skim the cleanest water from the surface of the reservoir. This portion of the water being at the surface, carries the dissolved oxygen which is necessary in subsequent steps of the purification.

As pointed out, two principal considerations attend the purification of river water, namely, the removal of suspended matter and the decomposition of soluble organic matter. The latter being the most mysterious would seem the most difficult, yet as a matter of fact the reverse is true. Mr. John W. Hill, formerly chief engineer in charge of the work, personally told me that the slow sand filters could handle water carrying forty parts of suspended matter per million without difficulty, but above that turbidity the trouble increased with the increase in turbidity. This fact made impracticable the accomplishment of both purposes in the same filter, upon an economical basis. The necessity for preliminary filtration, at a rapid rate, solely for the removal of suspended matter, soon made the preliminary filter the chief study. Beginning with Roxborough where the first type was employed, there becomes apparent under inspection a steady advance in construction and efficiency until the highest order is found in the last built at Torresdale. Here every operation is carried out on a gigantic scale, and with superb refinement of detail, in comparison with which the previous efforts are palpably crude. The most notable example is found in a consideration of the two methods followed for the removal of the sediment when the filter becomes clogged. At Belmont they have rigged a travelling platform which spans the bed, mounted upon wheels that run upon tracks secured at the top of the dividing wall. Upon this travelling platform is placed an electrically driven suction apparatus that lifts the deposit of mud from the surface of the bed and ejects it into a sewer. It is possible with this device and the aid of several men to remove the deposit from one filter in about five hours. At Torresdale the same operation requires one man just eight minutes by the watch. This seems almost incredible, yet it is absolutely true, and it was only brought into existence through the highest order of engineering skill, being the result of evolution, experience, and observation gained in work that had preceded it. The preliminary filter beds at Torresdale are radically different from either those at Roxborough or at Belmont and comprise one

hundred and twenty units. Each unit is essentially as follows: a rectangular concrete basin about eight feet deep, twenty and one-half feet wide and sixty feet long. Each one of these basins is subdivided into twelve small compartments, about ten feet square, separated from each other by partitions which form gutters about one foot wide and one foot deep. The compartments are arranged in two parallel rows of six each. The gutters all connect with the long central dividing drain. At the bottom of these basins perforated pipes are arranged for carrying air and water to the bottom of the filtering bed of sand which is two feet in depth. There is much more detail than is here stated and only sufficient is given to convey understanding of the operation of these filters, which is as follows:

Water is run from the storage basin with but short time for sedimentation directly upon the sand. The filtration is controlled, but permitted to proceed at a rapid rate, one hundred and twenty tanks delivering two hundred and forty million gallons in twenty-four hours. The process continues until the collected sediment causes such a diminution of the flow that it is no longer efficient, then water is shut off and the bed allowed to drain, after which it is washed; at the end of eight minutes it is again in commission and restored to its full activity. The washing is accomplished by the attendant who stands with watch in hand at an iron table upon which is arranged a maze of levers and switches. He operates a switch, immediately the whirr of an electric motor begins, followed by the rumble of the direct connected, positive blast, rotary air pump, which the motor drives. The next instant the sand in the filter begins to quiver and at once begins to bubble and boil and a lot of dirty water spills over into the gutters, from which it runs into the sewer. The air is continued for two minutes; a reversal of the same switch stops the air. A lever is next moved, at once clean water begins to pour into the bottom of the filter, and for one minute a flood of dirty water runs out at the top into the gutters. This ceases and again for two minutes the air boils the sand as before, breaking up the mass into individual grains and separating it from the accumulated mud. Finally the water is again introduced at the bottom and for three minutes the mud is washed out until clean water overflows. The celerity, thoroughness, and economy of this method are but little short of absolute perfection; in every department of this work we see the same idea carried out, the

elimination of manual labor and the introduction of mechanical devices, carried down even to the opening and closing of valves. Not a screw in sight—every valve regardless of size operated quickly and without effort by hydraulic power under direction of but one man.

The cost of this preliminary filter plant was one million dollars. The wonder is not that it cost so much, but rather that so much labor and material could be furnished for that sum. These statements may be regarded as extravagant; the work is there, it invites inspection and honest criticism.

From the preliminary filters the water is distributed without delay to the final filters. They are all covered under ground, this latitude requiring such construction. In cold weather it would be impossible to scrape a filter if it were frozen or covered with snow. While under ground they are illuminated electrically and their operation is conducted without hindrance and with comfort to the men. Over the entrance to the final filter is placed an iron plate bearing this inscription: "Employees are forbidden to carry into the filter lunch, paper, tobacco, or other objectionable substances." This is a cast iron rule, both literally and figuratively, and it is rigorously enforced.

The final filters do not offer much opportunity for improvement, they being practically complete and a thoroughly understood subject. Still where there is any chance, they are not wanting in ingenuity. Recently a successful attempt has been made to wash the sand without removing it to the exterior of the filter. The device is operated by hydraulic power, and it saves the removal and return of the sand, the only thing removed being the accumulated sediment which is washed away through conveyors into the sewer. This device saves much time and maintains the sand in the filter bed at a permanent level, insuring a more constant working of each unit. Through the previous removal of suspended matter by the preliminary filter the final rate of filtration has been raised from three to six million gallons per acre per twenty-four hours, just doubling their capacity. There is ample room at Torresdale for increasing the capacity of the plant to meet the demands of the future.

In the laboratory they are diligently engaged with microscopes and media, with reagent and balance in eternal vigilance, keeping track of the functioning of each filter, seeking to uncover defects

and to evolve new methods of procedure whereby the general excellence shall not only be maintained but advanced. Such is the careful supervision of these great water plants that the water supplied is always maintained at the highest recognized standards. An abstract from Annual Report shows a reduction of both turbidity and bacteria as follows:

	Per Cent.
Average reduction, turbidity,	99.46
Average reduction, bacteria,	99.50
Maximum reduction, turbidity,	100.00
Maximum reduction, bacteria,	99.96
Minimum reduction, turbidity,	88.90
Minimum reduction, bacteria,	97.61

These results show a change in the quality of the water from an intolerable abomination to a condition quite acceptable from its chemical, hygienic, and æsthetic sides.

Another important bearing of the laboratory upon the effective working of the plant may be noted in the following incident: Clogging of the filters is expected to occur more rapidly during times of freshet, as in the spring and fall, due to increased turbidity, but during the period of clear water, in July and August, filtration would naturally be expected to go on without much hindrance. It was noticed, however, that an increased difficulty was experienced and that the beds went out of commission even more rapidly than with very turbid water. Here, then, was a mystery to be unravelled. It remained for the laboratory to solve the problem, which they promptly did. The investigation disclosed the cause to be located in the presence of a minute vegetable growth known as chlorophyceæ that occurs in the river water in such prodigous numbers that they actually plug the final filters more rapidly than the mud had done it before. This incident happened prior to the completion of the preliminary filters. Since their installation, however, this difficulty is rendered impossible because the growths as well as the earthy sediments are removed in the first treatment.

There is one feature of the filtered water that every one has noted, its freedom from turbidity. We remember very distinctly the repugnant fluid formerly supplied. After every storm its turbidity was raised to any degree, and it remained opaque for indefinite periods. As we now have it supplied, there is no perceptible turbidity, regardless of the weather or what the condition of the river

may be. The water is always clean and inviting. This result alone would have made the effort worth while, but in addition to this, we have an achievement that cannot be measured nor calculated; it is simply invaluable.

The water supply of Philadelphia is drawn from two sources: the Delaware and Schuylkill Rivers. These streams and their tributaries traverse the most populous territory of this State. They are subject to every variety of contamination, from mine refuse to household sewage in such quantities that their waters are but dilute sewage in fact. Bacterial examination shows astonishing numbers and varieties. Dr. Abbott informs us that he has found spirilla among their number; that none is the spirillum of Asiatic cholera is perhaps due to good fortune and effective quarantine. Certainly we have been wide open to every kind of scourge possible. That this is now at an end is clearly and conclusively shown by a study of the typhoid fever statistics both before and subsequent to the introduction of filtered water. These tables are very voluminous and would take too much time to go over them in detail, yet it would be very interesting to cite a few examples beginning with January 5, 1906.

Date.	Number of Cases per 100,000 Population	
	Raw Water.	Filtered Water.
January 5	10.66	1.
January 12	17.40	1.
January 19	14.08	1.
January 26	17.80	1.
February 2	19.51	0.
February 9	21.61	1.
February 16	27.63	0.
February 23	19.63	1.
March 2	17.64	2.
March 9	10.70	1.
March 16	9.97	0.
March 23	10.80	0.
March 30	12.24	2.

The record of filtered water in West Philadelphia as a whole is very remarkable. Eliminating the cases which when traced are found to have originated elsewhere, the number remaining credited to the district is so small as to leave doubt as to typhoid in this city being caused to any extent by anything except the water supply. The indications of this are so positive that when on one occasion last summer two or three cases of typhoid appeared close together

and not many blocks from the boundary of the raw water district, the matter was attributed, without hesitation, to there being something wrong on the dividing line of the two districts, and upon examination two valves were found partly open, permitting raw water to get across the line. For the period of seven weeks following November 2, 1906, there was not a case originating in the district east of Forty-fifth Street, which altogether contains about eighty thousand people surrounded by a population of a million and a quarter, heavily infected with typhoid. This fact strongly indicates that typhoid fever in Philadelphia comes almost entirely from the drinking water and that slow sand filtration entirely removes the disease germs.

The time is too short for any of us to forget how viciously this work was assailed before its completion; how cruelly men whose life work had been spent in building reputations for excellence were torn from their places, and doubt and dishonor heaped upon them, but finally the work is completed and upon their original plans, the most gigantic effort of its kind in the entire world. It is in the very forefront of excellence, both as to construction and performance. It becomes an example for all the world to follow and an enduring monument to the men who made it a living testimonial to their integrity, ability, and devotion, and who will long be gratefully remembered after the muckraking maligner with his caustic pen and sonorous phrases has been lost among the cobwebs of a dark and musty past. Philadelphia is neither corrupt nor contented with anything but the best.

"BARBADOS" ALOES A MISNOMER.

By Lehn and Fink.
New York.

For a number of years past this house, in common with others, has been unable to secure Barbados aloes from Barbados itself, but has been compelled to secure supplies in the London and German markets, whence shipments labelled Barbados aloes were made to us. To ascertain the causes of this condition and especially to satisfy ourselves whether or no there is a true genuine Barbados aloes, we have thoroughly investigated the matter and here present the information resulting from our search. Under the Food and Drugs Act

great care as to correct labelling must be observed, and we wanted to be sure whether the use of the term Barbados was allowable.

To secure authentic and reliable information we applied to the British Colonial Secretary at Barbados, and herewith append his reply:

"Colonial Secretary's Office, BARBADOS,
"16th March, 1909.

"GENTLEMEN:

"I have the honour to acknowledge receipt of your letter dated February the 18th, 1909, on the subject of 'Barbados aloes.'

"2. I have made enquiries and have ascertained that there are no exporters of the drug. I enclose, for your information, a copy of a memorandum, which Messrs. Knight & Company, a prominent firm of Chemists on this Island, have prepared for me, together with its enclosures in original.

"3. I also enclose a copy of a minute by Dr. Watts, the Imperial Commissioner of Agriculture, who gives a reference of which you might care to avail yourself.

"I have the honour to be, gentlemen,
"Your most obedient servant,
"BASIL BLACKMON,
"Colonial Secretary.

"Messrs. LEHN & FINK,
"120 William Street, New York."

The report of Messrs. Knight & Co. is as follows:

"Barbados aloes is still used locally in medicine, but the small stock in the hands of the druggists here, bought for the most part from the growers years ago, comprises, as far as I can learn, all of the genuine article left in the world to-day, its manufacture for export having been discontinued.

"The drug now figuring in the markets of the world as 'Barbados aloes' is really exported from Curacao, the produce of that Island and its neighbours, Aruba and Bonaire.

"I believe about 15 or 20 years ago plants of the Barbados gourd were introduced into Curacao by a schooner trader from Barbados, and as this gourd (in which aloes is packed for export) is regarded as a sort of Hall Mark of the genuine Barbados article, its use enabled the Curacao shippers to obtain a ready market in London

and elsewhere, and it is doubtless this unfair competition which caused the extinction of our industry.

"Curacao aloes is still, however, shipped under its right name, but this is packed as heretofore in boxes and not in gourds and obtains a lesser price.

"Barbados aloes is quoted by all the English and American wholesale druggists in their catalogues, and it is possible to buy hundreds and thousands of pounds of an article under this name, in spite of the fact that the genuine article is no longer exported from Barbados."

"Copy of Minute by the Imperial Commissioner of Agriculture."

"Hon. Col. Sec.:

"I think Mr. Knight's minute describes the situation clearly and fully.

"The question arises if it is worth while to investigate the industry with a view to its revival.

"The whole question was carefully considered by Mr. Freeman, and his observations were published in the *West Indian Bulletin*, Volume III, pages 178–189, to which Messrs. Lehn & Fink might be referred. Copies of this publication should be available at Messrs. Gillespie Bros., 4 Storn Street, New York, library of Cornell University, library of New York Botanic Gardens, library of New York Export Station, Ithaca, library of Brooklyn Institute Museum.

"(Sgd.) Francis Watts.

"15, 3, '09."

From the foregoing and from other sources we may summarize as follows:

Barbados aloes is a term originally applied to a variety of aloes first produced in and exported from the island of Barbados, and which was characterized mainly by its peculiar and individual packing in gourds. For a considerable time the term was confined to this product and it acquired a positive trade value as indicating an aloes exported solely from Barbados.

Gradually, however, the appellation was widened in its scope to include other varieties of aloes from other sources (notably from Curacao) that were similarly packed in gourds, and for many years

past the word Barbados has been employed to indicate simply the form of packing, not the origin of the drug. Though this fact has undoubtedly been known to many in the trade, it is unfortunate that this liberal use of the term has come about, for it has caused much confusion and given rise to much misconception. Shippers in other countries than Barbados have long been packing their domestic produced aloes in gourds and sending it forth to appear in the market as true Barbados, and it is apparent that for at least a dozen years past if not longer not a pound of the genuine article has been produced in and exported from Barbados.

Upon examination of the drug lists referred to by Messrs. Knight & Co. it is seen that the purchaser of aloes labelled "Barbados" has paid considerably higher prices than for identically the same product labelled "Curacao." This trade custom has been followed very generally, and is possibly not very reprehensible from the ordinary trade view-point, neither has it worked any special injury in a medicinal and therapeutic sense. The word Barbados has simply been diverted from its original and true significance to be descriptive merely of the form and not the source of the drug.

This house, as others, has long been purchasing in the London drug markets, in Hamburg, and elsewhere Barbados aloes, so called, which in all probability came from Curacao or other countries than Barbados.

Aside from any injury to the pocketbook which this custom may have produced, it has occasioned great confusion with respect to our trade knowledge of the drug. Our Pharmacopœias (United States, British, and others) have perpetuated the confusion in both their descriptions and titles. For instance the British Pharmacopœia under "Aloe Barbadensis" gives the sub-title as "Barbados Aloes (Curacao Aloes)" and makes no distinction between the exportation from the various West Indian Islands. The U. S. Pharmacopœia as a secondary title has "Aloes (Aloe Barbadensis, Aloe Socotrina)," mentioning the botanical sources recognized but specifying no country or countries of origin.

Thus we have both trade custom and official sanction for naming as Barbados an aloes which does not come from that island.

And now let us point out an anomalous condition.

The U.S.P. is taken as the legal standard under the workings of the Food and Drugs Act.

The U.S.P. applies Barbados to aloes not coming from Barbados.

The Food and Drugs Act demands that a geographical name applied to a product must truly indicate the place of production; thus Barbados aloes must be produced in Barbados, Peruvian bark in Peru, Dutch chocolate in Holland, Roman chamomile in Rome, etc.

It is evidently incumbent upon the framers and revisers of the U.S.P. to reform its nomenclature to make it conform with the Food and Drugs Act. We protest that a geographical name in the title or sub-title of a U.S.P. product should be correctly employed. In the case of aloes no sub-title is required; on the contrary it is objectionable, producing misconception, and should be dropped. Let us have aloes, but unincumbered by misleading and untrue titular description. The requirements as to botanical origin, tests for identity, purity, and strength are all that are necessary.

CRUDE AND POWDERED DRUGS AT THE PORT OF NEW YORK DURING THE YEAR 1907–08.[1]

By H. H. Rusby.

An experience of one year, studiously devoted to the examination of the crude drugs arriving at the Port of New York, and supplemented by the examination of many lots obtained after their entry into commerce and while being distributed to the consumer, has been found intensely interesting and instructive. It is the object of this paper to convey to the members of the Association as much as possible of this interest and information.

The instructions under which I work for the Drug Laboratory of the Bureau of Chemistry, U. S. Department of Agriculture, are to ascertain whether the drugs imported, and those distributed from one State to another, are true to name and of a fit quality for the manufacture of medicinal preparations. The method pursued is, first, to examine everything offered for import, which the inspector on duty is not sure is of standard quality, and to report a recommendation as to its being admitted or deported. Its actual admission or deportation is in the hands of the Treasury Department. If deported, it may be again shipped to this country, consigned to some other port, where it is believed that it is likely to be admitted, a belief that is sometimes justified by the subsequent course of events.

[1] Read at the 56th annual meeting of the American Pharmaceutical Association, September, 1908.

As a matter of fact, I have to record that a considerable number of drugs rejected at New York have afterward been encountered in commerce, and we have known an importer and the manufacturer for whom the goods were intended to haggle over the distribution of the expense connected with reimporting them at a port where "we know we can get them admitted." The statement may excite surprise, or even incredulity, that it is possible to recognize in commerce a particular lot of drug that was formerly rejected at the port, but investigation will confirm it. For example, a certain lot of adulterated belladonna root is offered and rejected. The use of a poke root as the adulterant would not be specific, but its presence in a certain percentage might be. When it is determined that scopola is also contained and that its percentage is the same in both lots, there is a strong probability that the two lots are one. There are many minor differences between different lots of the same drug which render the evidence of identity cumulative.

In another case a broker offers for import five tons of ground olive pits. On being questioned, he says they are for a party, whom he names, who wishes to use them "as a filler for chicken food." We know that the party named does not deal in chicken food, but only in drugs. We cannot reject the shipment, since it is exactly what it is labelled, and is neither adulterated nor misbranded. We watch the goods distributed by the party in question, and within a few months secure samples of nine of his powdered drugs, five of which contain large quantities of ground olive pits. Is there much doubt that these belong to the lot imported previously?

Let us devote a moment to the results, respectively, of errors in acceptance and in rejection, and first as to assayable drugs. It might be assumed that the error of admitting a drug deficient in alkaloidal percentage would not benefit the importer, since its deficiency would be at once detected, and it would be unsalable. The reverse is, however, true. With the present excessive scarcity of competent aids and the crudity of organization and methods natural to the incipient stages of such a work, the percentage of cases detected at the point of final distribution, in the form of medicinal preparations, is very small indeed. Many medicine-makers, large as well as small, even yet make no serious attempt to standardize their assayable articles. From these conditions it follows that some are not only willing to take their chances of detection with substandard drugs, but are actually on the watch to purchase them

below the regular price for standard goods. It must also be remembered that if an importation is passed by the authorities this fact is apt to be used by the seller as a sort of guarantee that it is of standard quality. An error in admission is, therefore, very likely to result in serious consequences. If this is true of assayable goods, it is obviously far more serious in case of those for which there is no practicable standard, with the probability of detection correspondingly decreased.

From this it follows that importers desirous, as most of them are, of seeing the objects of the pure drugs law accomplished do not show good judgment when they apply pressure to secure the entrance of an article which they know to be defective.

Badly as the above class of errors work, they are, on the whole, rather less serious than errors in rejecting. A single act of injustice to an importer does more to discredit the law, to excite opposition to its administration and to alienate sympathy, than can be overcome by a long course of exact dealing, or by many acts of special consideration.

It, therefore, goes without saying that officials who are wide awake to these two contingencies will be scrupulously careful to avoid errors in either direction, and will, when in doubt, incline toward favoring the importer. In such cases, it is customary to "release without prejudice," by which is meant that that particular lot is passed, but that no precedent regarding articles of that character is to be regarded as being thereby established, it being held that in future better information may lead to reversal of action.

This important fact regarding the attitude of our officials is not appreciated as it should be by our importers. There is too great a readiness among them to assume that the authorities are wrong when there are the best of reasons why they should have investigated thoroughly before taking action. The really surprising fact is that the importer frequently protests with great positiveness when, as subsequent events prove, he did not examine his own importation to ascertain its character. Numerous instances of this kind have occurred during the past year.

A prominent importer appeared before the Drug Section of the New York Board of Trade with the open charge that we had rejected his cut dandelion root "just because it had a little dust upon it"; but the inspectors had found that it yielded more than 48 per cent. of ash, about ten times the proper amount, and they

had separated from it, by stirring in water, more than 40 per cent. of stones, ingeniously selected because of their similar color, and carefully sifted so as to be of the same size as the fragments of dandelion.

The rejection of a lot of belladonna root brought forth not only a violent protest, but one not free from insulting allusions. The importer, however, was later quite dismayed to be shown that there was not a fragment of belladonna in the shipment, it being all poke root.

Another demanded to know on what grounds his matico had been rejected, and on accepting an invitation to call and compare it with a genuine sample, declared himself perfectly satisfied that the decision was just.

An importer took the writer up to an open bag of bark and pointing down to it said: "There you are! Is not that genuine simaruba?" "Which?" was the reply, as both hands were thrust into the bag and two totally different articles were drawn out. "Oh, of course," said he, "we only look into the bag; we can't be expected to go through it and examine it as you do."

A very large and important dealer nearly fainted on being told that his ground belladonna root was 50 per cent. olive pits, but soon learned, from his own investigations, that the miller to whom he sent his fine drugs to be ground was systematically abstracting a portion and substituting adulterants.

Doubtless the most important part of the year's results is the demonstration that much of the adulteration of drugs is intentional and studied, and is a business proposition purely. The importance of this demonstration can hardly be overestimated. The plea of non-intent has been in the past the strongest defense offered. It should not have been regarded as a good one, even if justified, for responsibility is fixed, with or without good intent. In fact, however, this plea has been as effective as it was strenuous. Upon the presentation of conclusive evidence that a lot of drug was grossly impure, everybody would sit up and take notice, prepared to soundly condemn the offender; but up gets an apologist, and says, half pleadingly, "I hope that the speaker does not mean to imply that there has been any *intentional* adulteration. It is certainly true that drugs are not always what they should be. Conditions of collection and commerce are such that this could not be expected, and I am very sure that the gentlemen concerned could never be suspected of so

serious an act as that of intentionally adulterating an article intended for the use of the sick. Their character is irreproachable," etc., etc. Everyone drops back in his seat, concluding that the condition of affairs, though deplorable, is inevitable. If it is true in this case, who knows in which other case it is also true? The wicked adulterators who happen to be present mentally resolve that hereafter they will increase the 25 per cent. of adulterants to 50 per cent. and that they will be safe in adulterating a few more things which fear has previously led them to leave in the pure condition. The most effectual means possible has thus been employed for intrenching and extending the evil work.

This claim has worked very well on many occasions, simply because to dispute it was impracticable. It is a very easy, safe and agreeable thing for men to publicly claim non-intent for each other, but a very disagreeable and more or less dangerous thing for one to publicly charge evil intent. That condition will never again exist in this Association, so far as this subject is concerned. It is true that the great majority have no positive intent to engage in flagrant adulteration, and that a somewhat smaller majority are heartily opposed to it. Yet the evidence this day presented, of a strictly legal character, is conclusive that there is a large amount of adulteration, pursued on a systematic and scientific basis, and with the employment of expert assistance. It involves conspiracy to defraud among foreign shippers, home importers, millers and manufacturers. It is perfectly practicable to detect and criminally convict every one of the parties, and the evidence, both intra- and interstate, for doing this in the case of a considerable number, is already on official file.

The question next arises "What then?" Many will insist upon wholesale punishment, but those who carry the responsibility for this great work have broad fields to overlook. Vengeance is not the object of law. The greatest possible good with the least possible harm is the motto of the real reformer. If a new *entente,* in which co-operation for the common good is general, can be brought about, it will be worth any sacrifice that can be made. When it appears that no amount of rational procedure or patient treatment can turn some offender, it will be time to inflict upon him a punishment so great that it will never be forgotten either by him who suffers or by those who see.

This brief statement of the case, sustained by the evidence of

the specimens exhibited, must be considered in connection with my paper of last year, in which I showed that most of the imperfections in products were due to very great, though not ultimately insuperable difficulties connected with collecting and preparing supplies, and to incompetence and carelessness on the part of those engaged in the distribution of our supplies.

I reiterate the statement then made that no man should be permitted to engage in the distribution of drugs in any way, who has not been compelled to undergo an examination as to his practical competence, and received a license; the same as the pharmacist is obliged to do. His license should furthermore be subject to revocation if it can be shown that he is abusing his privileges.

As to the difficulties regarding collecting, there is no escape from the conviction that we must gradually work toward the production of drugs by agricultural methods. If an improvement in the quality of wheat, potatoes, plums and pumpkins justifies vast outlays of time and money, it would be silly to waste time over an argument that it is worth while in the case of powerful drugs.

But I am sure that the Association is thinking of other things; you are asking not how the existing conditions ought to be changed but what we can do in the present emergency. How can the laws in force be administered, or modified if necessary, so as to accomplish their object? For the most part, I prefer to leave this subject to my official superiors, but there are several points which I feel like urging on the present occasion.

The first is that our States must not take a complacent view of the relations of the federal government to this work. There is the most urgent need of strenuous work in and by every State in the Union. Even if no mistakes were made, our market would still be flooded with adulterated goods. The federal government may catch these articles in interstate transit, though various conditions render this extremely difficult. But suppose that the adulteration is practiced within a State and the articles are consumed there. The federal government is then quite powerless. In fact, a regular interstate business is done in the materials for adulteration, to be used in just this way. This statement refers more to foods than to drugs, but the fact of its being possible under the circumstances is sufficient to call for some method of control. The only basis of such control is careful organization within the State. Fortunately, neglect

of this matter will react against the neglectful community, which will become a dumping ground for the refuse.

In perfecting such State organization, the States cannot expect to rely upon the services of the federal employees. There is no desire to refuse such assistance; our government has always been exceedingly liberal in such matters, but all the government employees have more than they can do and are overworked. They would employ more assistants but cannot find competent ones. An unreliable expert may lead the government into the most serious responsibilities by his mistakes, and such must not be employed. The States must find their own assistants.

One of the most important results of this situation is to show to pharmacists in the most remote parts of our territory the actual state of incompetence that exists in the matter of pharmaceutical testing, chemical and microscopical. Pharmaceutical education has been just as guilty of false pretense and fraudulent output as has drug purveying, and the present situation is going to show the necessity of the States making suitable provision for the thorough education of inspectors and assayers, from their preliminary education up to their technical training.

Probably the next most important lesson is that of showing the very general incompetence of Boards of Pharmacy to pursue this work. The organization of these boards on the basis of political pull will result in failure that will become the more disgraceful the farther it goes. There is a great clamor at the present time to have this work controlled by pharmacists. The theory is correct, but the present conditions are not opportune. Pharmacy must fit itself for responsibility before the responsibility is entrusted to it. That it is doing this as rapidly as any one could reasonably expect is very gratifying, but considerable remains to be done in this direction before even a near approach to a satisfactory condition can be made.

Let us now consider some of the specimens of adulterated goods, taking them up in a classified order.

Let us first consider a group of imperfections due to natural conditions presenting such great difficulties as to constitute an excuse of greater or less value. I have here a specimen of henbane leaves with an amount of sand caught within their folds, estimated at about 28 per cent. of the weight. The peculiar surface of henbane

is such as to cause it to catch and hold sand and other earthy matters with great readiness. Very often the plant or its branches become broken down so as to rest upon the ground, in which case large amounts of such impurities are likely to be deposited upon them. This tendency is greater when the lower leaves, existing before the time of flowering, are collected, since these leaves rest almost directly upon the ground. This, however, is not the proper time to collect the drug. In the present instance, the amount of sand is larger than even these conditions would account for and there can be little doubt that a considerable quantity of it has been intentionally added.

Anise is another drug that is very apt to contain an excessive amount of sand, owing to the natural conditions of its production, and this is true of all fruits (so-called seeds) of its class. Nevertheless an anise that contains 20 or 25 per cent. of sand has not been properly cleaned.

This cumin fruit contains stems and chaff to the extent of nearly 25 per cent. In this drug the stems are so heavy and hard to winnow out that an excuse may well be presented. Usually such stems can be sifted out, but since cumin is a very long cremocarp, many short pieces of stem are likely to escape the sifting process. Nevertheless, in spite of these palliating circumstances, it is evident that there must have been carelessness when 20 to 25 per cent. of such waste matter occurs in the drug.

This specimen of lactucarium is mouldy through and through, and is unfit for use. The natural tendency of this drug to become mouldy in drying is very great indeed. With suitable apparatus this accident can be wholly avoided, but a great many small producers are not thus favorably situated. Mould usually exists upon the surface of the drug, but when it permeates the entire mass, as in this case, a preparation made from it becomes almost as much a preparation of mould as of lactucarium.

Here are some jambul seeds which have been entirely hollowed out by worms and which are quite unfit for use. It is very difficult to exclude worms from this drug but once it has occurred the loss should fall at the place where it occurs, and no attempt should be made to pass it along upon some defenseless consumer.

This lot of belladonna leaf consists to the extent of 50 per cent. of stems and fruits, while another contains 80 per cent. of stems. There is often an excuse for the presence of a moderate excess of

stems in this drug, but such an amount as here found must mean wrong intent. We know that the fruits of this drug are deficient in activity, but the medicinal quality of the stems is not settled. There is some reason to believe that all except the very large stems are equal to the leaves. The subject requires investigation and a possible broadening of our definition, but at the present time the definition includes only the leaves.

The second class of cases to be considered is that of drugs regarding which errors are for one reason or another quite likely to occur. It is not intended, on this account, to entirely excuse the distribution of such drugs to consumers. It is inconceivable that somewhere along the line the mistake should not have been detected, even in the present disgraceful state of combined ignorance and carelessness among dealers and handlers. We may, however, in order to free our indictment from every possible element of undue severity, separate these cases from those in which wrong intent is absolutely certain.

Five shipments of spurious matico have reached New York within the year, against, I think, four of the genuine. The similarity between these two is very close indeed and a mistake, continued from collector to consumer, is quite excusable. I therefore exhibit mounted specimens of the two articles, and shall very shortly publish an exhaustive paper on this subject.

Several shipments of spergula or giant spurrey seeds have arrived as "asparagus seeds," the case being one merely of confusion of similar names. It serves, however, to illustrate the carelessness of a system which allows the business to be conducted by people so lacking in education as to make and continue such an error.

Nigella, or so-called black caraway, labelled "caraway," represents a similar confusion of names.

A lot of Japanese scopola is imported as "scopola"; that is, as European scopola. So similar are these two plants that so high an authority as Holmes has questioned whether they do not represent a single species. Nevertheless, assay shows this particular lot to be very deficient in alkaloid.

Coto is one of the rarest, if not the very rarest, of important drugs. Paracoto probably stands next. The only genuine shipments of either that have reached this market within a year were two one-pound samples sent over by Merck & Company as a donation to the New York Botanical Gardens. Five spurious shipments

have been offered and, although rejected by the Department of Agriculture, some of them have afterward found their way into commerce.

Genuine soap bark is apparently becoming scarce, and several sorts, apparently different, though closely similar, are coming forward. No one knows anything about their identity or value. They may be superior to the original. There is great need of an investigation of this subject.

In the second class just considered, not only is the American dealer, and most if not all other parties concerned, freed from the direct charge of wrong intent, but the possibility of error is so great that he may be freed from all except technical responsibility, in most cases.

In the third class, now to be considered, there are also strong possibilities of genuine error on the part either of the collector or the dealer, but yet the latter can claim no just freedom from responsibility. His error must have resulted from gross incompetence or gross carelessness, since means for detection are ample and convenient and such detection is specifically called for. There is, moreover, good reason to believe that in most of the cases such dealers have had a guilty knowledge of the facts.

The presence of henbane in stramonium and stramonium in henbane represents fraud on the part of the collectors. By dealers too careless to properly examine the drug carefully, this fraud might easily be overlooked.

During the past year, shipments of winter savory and of *Origanum onites* have both been offered as "thyme." They have the same odor and flavor, and probably the same composition and properties as thyme, but the substitution is improper and is easily enough detected by one who is interested. The last named plant has also been imported as marjoram.

Several different species of *Marrubium* are imported as horehound.

Dealers sometimes overlook the fact that tansy is defined as the leaves and tops, and offer the whole of the plant, entire or chopped up, an article that should be used only for distillation.

The year has seen an importation of Japanese aconite under the name "aconite."

Mylabris has once been imported as cantharis. All that was necessary was to relabel the article, in order to secure its admission.

This indicates the necessity of watching for this article in powdered cantharides. The quality of mylabris is probably rather superior to that of cantharis and its use should probably be authorized.

In spite of repeated exposures, the worthless brown *Strophanthus hispidus* continues to arrive as "strophanthus." Its use in preparations is not nearly so general as a year ago, yet the fact that it can be bought in any quantity in all of our drug markets shows clearly that many lives are continually jeopardized, and more or less of them doubtless lost, through this wicked fraud.

In the same class belongs the use of the spurious jaborandi, here exhibited. Persistent exposure has caused this article to nearly disappear, but it is still obtainable. This particular lot was not only labelled "jaborandi," but underneath was the botanical name "Piper jaborandi," which was an additional act of misbranding, since the leaf is really a species of *Pilocarpus*.

It seems incredible that any one should mistake the large woody rhizome, of unknown botanical origin, here submitted, for arnica root, but so it was offered at the Port of New York. It is very likely an *Inula* or a *Doronicum*.

The three lists already given include all the cases of spurious importations for which an excuse can possibly be found, notwithstanding that most of them represent fraud at some point in their progress. The following long list includes only acts which must be classed as intentionally fraudulent, not only at the point of origin but on the part of all handlers upon this side of the water. To this statement concerning "all handlers" an exception must be made in regard to the powdered drugs, which will be separately considered. If ignorance or error could possibly be claimed in any one of these cases, such a claim must be regarded merely as a pleading of the baby act.

Three shipments of the well-known worthless maracaibo bark have been imported as "cinchona," which is equivalent to calling them calisaya.

Two shipments of the worthless buds of *Populus monilifera* have come in as balm of gilead buds.

Nearly all the shipments of belladonna root of the past year have contained poke root, in amounts ranging from 15 per cent. to 42 per cent. Many of them have also contained scopola, and several other and worthless roots have also been found. So general has been this adulteration of belladonna root that at one time nothing

else could be found in our market, and there was danger that the manufacture of preparations of belladonna root would have to cease. The unprecedented action was then taken by the Treasury Department of permitting the poke root to be picked out from one large shipment and the belladonna to be utilized. This happy occurrence should never be lost sight of by American importers, since in my opinion it indicates a very desirable line of action for a number of forms of adulteration.

Dried scammony roots have long been used in Europe for the extraction of their resin, notwithstanding that this resin is required to be collected from the living root. Recently the additional step has been taken by manufacturers of importing a Mexican ipomœa root to be used for this purpose. Three shipments of this root have been received at New York, one labelled "jalap," the others "scammony root."

We have had a number of lots of benzoin in which chopped bark occurred in very large percentage, this and the sand present probably representing 40 to 50 per cent. of the entire weight. It is unfortunate that the Pharmacopœia does not fix a limit of impurity for this very important and expensive article.

One lot of benzoin was entirely spurious, being an artificial mixture.

Other artificial mixtures are commonly imported as balsam of Peru and occasionally as styrax.

Adulterated saffron has been on the steady decrease, yet many such shipments have been offered. A much more disgusting thing has been two shipments of calendula, heavily coated with mineral matter and colored to imitate saffron.

The offering of lycopodium has been, on the whole, surprisingly good, though one lot was heavily adulterated with potato starch, and two lots with pine pollen.

Kamala, adulterated with sand and with ground bark and sand, has been rather common. More unexpected was a lot containing a large quantity of our now familiar acquaintance, ground olive pits.

Broken senna, if clean and pure, is every whit as good as the finest whole leaf, and offers a good chance for the pharmacist to economize, since it can be bought much more cheaply. Senna siftings, on the other hand, are full of seeds, sand, pieces of wood and other impurities, and should be carefully distinguished as very inferior. Many lots of this latter article have this year been offered, labelled "broken senna."

As is known to most of you, Mexican sarsaparilla roots are marketed attached to a short piece of the rhizome. This rhizome we are directed by the Pharmacopœia to remove before using. So removed it is known as the "sarsaparilla butt." Several large shipments of these butts have been received from Germany and London, where the roots have been removed and used. Part of this was done in converting the Mexican sarsaparilla into rolls to imitate and be sold for the higher priced Honduras sarsaparilla. There can be no doubt that they were intended to be used here for making sarsaparilla preparations.

Here is a shipment of quince seeds consisting quite largely of small fragments of very young quinces chopped up and dried, and possessing, of course, none of the mucilage that gives to quince seeds their value.

Three lots of spurious arnica flowers, evidently the flowers of *Inula britannica,* have been offered for import.

We have had two shipments of cannabis indica, grown in Africa, and several which were spoiled in curing. One other lot consisted largely of fruits or so-called seeds.

Probably the most important and interesting of all the year's experiences has been the importation of three shipments of *Hyoscyamus muticus* as "henbane." This is a very large plant, collected in Egypt so cheaply that a ton of it can probably be obtained at less cost than a hundred-weight of good henbane. Whereas henbane contains but one-twelfth of one per cent. of alkaloid, this species contains often more than one per cent., and even up to one and a quarter per cent. This alkaloid being all hyoscyamine, substitution is unpardonable. Remembering the difficulty of getting henbane that will assay up to the requirement, you will see how useful this article would be for the purpose of adding in suitable amount to an inferior henbane to make it appear to conform to the standard. As a matter of fact I have actually found it so employed in powdered henbane.

This lot of inferior lavender flowers, dyed a beautiful blue, is of great interest.

Spurious buchus have been very common, and I am led to say that I consider one of the most important duties of the Committee of Revision of the U. S. P. to be to undertake a careful investigation of the composition and properties of the several buchus. I have always regarded the evidence on which long buchu was driven out

of use as very inconclusive, and many practitioners of medicine specify it by preference. It is not unlikely that all the varieties are practically equal in value.

The importation of buchu consisting largely of stems is a different matter. Very small, thin stems are perhaps as useful as the leaves, but 23 per cent. of thick, woody stems, which we have found in buchu, is entirely improper. This subject of the character and limitation of stems in buchu also requires treatment in the official definition.

We have received one shipment of charlock seeds labelled "French mustard seeds."

A lot of "cut dandelion root" was found to consist of the bark trimmings from chicory. Cut dandelion root containing small stones has already been referred to.

The same kind of stones there found have also been used to load anise to the extent of 28 per cent.

Since every form of tobacco is subject to a duty, it was very clever to import the large leaves of *Nicotiana rustica* as "Russian mullein leaves."

Rhubarb is sometimes subject, for reasons unknown to me, to being soft, spongy, and of inky blackness in the interior, rendering it apparently almost worthless. I have seen a large shipment of 155 cases consisting of half of this, the rest of good roots, the two being perfectly intermixed. Since the external appearance was about the same in both, there was no way of separating them with certainty except by chopping every piece in two.

My account of the entire drugs will close with reference to a large shipment of nux vomica, consisting largely of small worthless seeds which had been rolled in some mixture of clay, probably clay mixed with the pulp of the nux vomica fruit, so that it adhered in layers and finally brought the seeds up to the average size and weight; a very clever sort of adulteration that would have passed undetected except by such very careful inspectors as are employed in New York.

Regarding the powdered drugs, there is little to be said beyond submitting the list, and allowing the members to form their own conclusions. In the case of anise containing 25 per cent. of sand, belladonna containing poke root, and digitalis containing stramonium, the defect in the powder was probably inherited from the whole drug, and the miller may have been guilty only of carelessness; but

when we find three cases in which gentian contained 50 per cent. of fibre, and another in which it contains a large percentage of olive pits, two lots of turmeric containing wheat starch, three lots of colocynth having the seeds ground with the pulp, henbane containing hyoscyamus muticus, five lots of belladonna root containing from 30 per cent. to 50 per cent. of olive pits, ipecac with the same amount of the same adulterant, white agaric, euphorbium and gamboge with 25 per cent. of cornstarch, sage with 50 per cent. of the same, conium, asafetida, and santonica heavily adulterated with exhausted birch-bark, and licorice, consisting of the bark peelings from Russian licorice, there is but one statement that fits the case; each and every one of the drug millers represented by these goods deserves to be put behind the bars for a good long term of years.

I need hardly add that it is among the State boards and State commissioners that the principal work in the examination of powdered drugs is to be performed, for it is this form of the drug which comes closest to the consumer.

In conclusion, I have two questions to submit to the good judgment of the members of the Association.

First.—Should not every member of a Board of Pharmacy and every food and drug commissioner, State as well as federal, be compelled to undergo a special and searching examination, far broader and more searching than that for the license of pharmacists, and be specially licensed for the work, and then receive a salary commensurate with the responsible position that he has to fill, and with the time and expense involved in fitting himself for it?

Second.—How much confidence should be reposed in the representatives of commerce in the establishment and emendation of drug standards, in view of the showing made by these importations of the past year. There has recently been a strenuous demand from various directions that commercial men should be given a strong influence in the framing of the definition and standards of our next Pharmacopœia. Surely, advice and assistance from such sources should be earnestly sought, but that authority should be vested in them, in view of present trade conditions, appears to me to be a monstrous suggestion. For many years past a few of us have labored strenuously in this Association to bring to the members a knowledge of the evil conditions actually existing in the wholesale drug trade. As you all know, we have been met by repeated, persistent and strenuous denial, much of it taking a form that was

anything but complimentary to the knowledge and judgment of those presenting the facts. To awaken an interest on the part of the members of the association, to secure the establishment of conditions that would lead to investigation and determination of the facts, to gradually promote a general knowledge of those facts, and to finally submit such conclusive and even indisputable evidence as that upon this table, has been not only a gradual but a very painstaking process, in the face of the commercial opposition to which I have referred. This commercial opposition has laid great stress upon the claim that it and it alone occupied a position of thorough knowledge of the case, and that opposition to its statements should not be trusted. If this claim as to knowledge is well founded, then this commercial opposition must have been one of guilty knowledge. If, on the other hand, it could so greatly err in reaching just conclusions, in spite of its vantage ground of superior opportunity, it is thereby condemned as unfit to be trusted with the guidance of drug standards and their administration.

CORRESPONDENCE.

UNITED STATES PHARMACOPŒIAL CONVENTION.
(Incorporated 1900.)

PHILADELPHIA, PA., May 1, 1909.

In accordance with the provisions of Article VIII, Chapter 1, of the By-Laws of the U. S. Pharmacopœial Convention, the President of the Convention hereby invites the several bodies, entitled under the Constitution to representation therein, to appoint delegates to the First Decennial Meeting of the said Convention to be held in the City of Washington, May 10, 1910.

The attention of all concerned is invited to the following extract from the Constitution:

ARTICLE II.

Membership.

SECTION 1. The members of the United States Pharmacopœial Convention, in addition to the Incorporators and their associates, shall be delegates elected by the following organizations in the manner they shall respectively provide: Incorporated Medical Colleges, and Medical Schools connected with Incorporated Colleges

and Universities; Incorporated Colleges of Pharmacy, and Pharmaceutical Schools connected with Incorporated Universities; Incorporated State Medical Associations; Incorporated State Pharmaceutical Associations; the American Medical Association, the American Pharmaceutical Association, and the American Chemical Society; provided that no such organization shall be entitled to representation unless it shall have been incorporated within and shall have been in continuous operation in the United States for at least five years before the time fixed for the decennial meeting of this corporation.

SECTION 2. Delegates appointed by the Surgeon-General of the United States Army, the Surgeon-General of the United States Navy, and the Surgeon-General of the United States Marine Hospital Service, and by the organizations not hereinbefore named which were admitted to representation in the Convention of 1900, shall also be members of the corporation. Each body and each branch of the United States Government above mentioned shall be entitled to send *three delegates* to the meetings of this corporation. But no such delegates as are provided for in this article shall be members until their credentials shall have been examined and acted upon as provided for by the By-Laws. Delegates admitted as members at any decennial meeting shall continue to be members of the United States Pharmacopœial Convention until their successors shall have been appointed and admitted as delegates to the ensuing Convention and no longer.

Notification of the appointment of delegates, accompanied by the necessary certification of eligibility as required by Article II, Section 1, of the Constitution above quoted, should be forwarded as soon as practicable to the Secretary of the Board of Trustees.

HORATIO C WOOD, M.D.,
President.

MURRAY GALT MOTTER, M.D.,
Secretary of the Board of Trustees,
1841 Summit Place, Washington, D. C.

THE SPANISH TRANSLATION OF THE PHARMACOPŒIA OF THE UNITED STATES OF AMERICA. EIGHTH REVISION.

The close and friendly relations existing between the United States and Spanish-speaking countries will be further cemented by the appearance of this book, which has been three years in actual

preparation. Some delay has been experienced in the completion of the translation, due mainly to the passage of the United States Food and Drugs Act, June 30, 1906, making necessary some additions and changes in the chemical tests and standards.

The Spanish translation is from the latest revised text and it is confidently hoped that it may prove a potent factor in elevating the professions of medicine and pharmacy by furnishing a guide to the preparation of medicines accurately from drugs of the highest quality.

The Committee of Revision and the editor of the Spanish edition have labored earnestly to produce a standard work which will merit the approbation of scientific men, and science knows no language and no country.

JOSEPH P. REMINGTON,
Chairman of the Committee of Revision of the Pharmacopœia of the United States of America (8th Rev.).

BOOK REVIEWS.

THE NATIONAL STANDARD DISPENSATORY—Containing the National History, Chemistry, Pharmacy, Actions and Uses of Medicines, including those recognized in the Pharmacopœias of the United States, Great Britain, and Germany, with many references to other Foreign Pharmacopœias. By Hobart Amory Hare, B.Sc., M.D., Professor of Therapeutics and Materia Medica in Jefferson Medical College, Philadelphia; Charles Caspari, Jr., Ph.G., Phar.D., Professor of Theoretical and Applied Pharmacy in the Maryland College of Pharmacy, Baltimore; and Henry H. Rusby, M.D., Professor of Botany and Materia Medica in the College of Pharmacy of the City of New York; Expert in Drug Products, Bureau of Chemistry, Department of Agriculture, Washington, D. C.; Members of the Committee of Revision of the U. S. P.; with valuable assistance from Edward Kremers, Ph.D., Daniel Base, Ph.D., and Joseph F. Geisler, Ph.C. New (2d) edition, thoroughly revised. Magnificent imperial octavo, 2050 pages, with 478 engravings. Cloth, $6.00 net; full leather, $7.00 net. Thumb-letter index 50 cents extra. Lea & Febiger, publishers, Philadelphia and New York.

A favorable review of the National Standard Dispensatory has

already been published in this JOURNAL (vol. 77, p. 539). In addition to a revision of the text of the first edition, at least two hundred new articles have been introduced. Other new features are found in the addition of *The National Formulary* in abstract, as well as a formulary of unofficial preparations widely used, and the United States Pure Food and Drugs Law, together with the decisions necessary for its interpretation. The *General Index,* of 120 three-columned pages, contains in one alphabet the names of drugs in English, French, German, Italian, Spanish, and Latin, rendering it easy to find the article on any substance used in medicine by civilized nations. This applies to the minor as well as the major drugs of the world. The *Therapeutic Index,* of 20 three-columned pages, arranged under Diseases, brings most suggestively to the mind of the physician every drug of value, and guides him to the directions for its use.

It is impossible to review a work of this character in detail. All that can be done is to give one's impression after going carefully over the pages of some of the articles. While some criticisms might be made, one cannot but feel that the work on the whole has been well done and is creditable to the authors. It is a particularly valuable reference work for pharmacists, botanists, chemists, and physicians. The inclusion of more references to the literature would have made it of greater value to the research worker. The editing has been well done, the information given being very useful and carefully selected.

SQUIRE'S COMPANION TO THE LATEST EDITION OF THE BRITISH PHARMACOPŒIA, comparing the strength of its various preparations with those of the United States and other foreign Pharmacopœias, to which are added not official preparations and practical hints on prescribing. By Peter Wyatt Squire. Eighteenth edition. London: J. & A. Churchill, 7 Great Marlborough Street, 1908.

This is an exceedingly valuable book. The more it is used the more one finds what a wealth of material it contains. It contains considerable information that the pharmacist and physician will doubtless not readily find in any other book on his shelf. While it is a book of some 1500 pages it seems small compared to some of the other reference books for the reason that it can be handled more easily.

Substances official in the British Pharmacopœia appear in large

type, those which are unofficial in small. A short description of the substance is given immediately following the title and the main headings then follow: solubility, medicinal properties, dose, prescribing notes, incompatibles, official preparations, not official, antidotes, foreign Pharmacopœias, descriptive notes and tests.

The subject of solubility has been a particular feature of the Companion since 1864. In the present edition the subject has received the closest attention and innumerable figures have been included. Following the suggestion conveyed in one of the principal medical journals, in those instances where a substance is very soluble in a menstruum, the increase in volume caused by its solution has been given; thus ammonium bromide, 1 in 1½ of water and measures 2; ammonium phosphate, 1 in 2 of water and measures 2½; potassium iodide, 4 in 3 of water and measures 4; and quinine bihydrochloride, 2 in 1½ of water and measures 3. A special article on the subject has been written for the book and appears on pages 1136 and 1137.

The doses given are those in which the prescribed medicament is usually given. In the cases of potent chemicals, drugs, or preparations, the doses are compared with the maximum single and daily doses of one or other of the more important foreign Pharmacopœias, or where such is not available, with a text-book of recognized foreign standing, such as Hager.

The paragraphs on foreign Pharmacopœias have been very largely extended, and the strengths of all the more important preparations of seventeen foreign Pharmacopœias are compared. The French, German, Italian, and Spanish names are given under all the important headings.

Descriptive notes of vegetable drugs have been specially written for the book by Mr. E. Morell Holmes, who is generally recognized as one of the leading authorities on this particular subject. They deal with the principal distinguishing features of the drugs, their commercial varieties, and probable contaminations and sophistications.

The chapter on Therapeutic Agents of Microbial Origin has been revised and partly rewritten by Dr. R. Tanner Hewlett, and gives the medical practitioner a clear idea of modern treatment by antitoxins, and sera.

A chapter on Volumetric Analysis has been specially written for the Companion, giving first those solutions which have been

found of particular service in the author's laboratory, and then a comparison of those in use in the British, German, and United States Pharmacopœias.

PRACTICAL PHYSIOLOGICAL CHEMISTRY.—A Book Designed for Use in Courses in Practical Physiological Chemistry in Schools of Medicine and of Science. By Philip B. Hawk, M.S., Ph.D., Professor of Physiological Chemistry in the University of Illinois. Second edition, revised and enlarged. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut St., 1909. $2.50 net.

Hawk's text-book on physiological chemistry is one of the most valuable books on this subject. It contains a large amount of information representing the most recent researches in this line of investigation. The illustrations are numerous, frequently in colors, well selected, and will prove of great advantage to the student. Subjects treated by the author include: enzymes and their action; carbohydrates; salivary digestion; proteins; gastric digestion; fats; pancreatic digestion; bile; putrefaction products; fæces; blood; milk; epithelial and connective tissues; muscular tissue; nervous tissue; urine; and quantitative analysis of milk, gastric juice, and blood.

The work will be found of inestimable value, not only to the student of physiological chemistry but also to the analyst of pathological products. In fact it might be said that a course as outlined in this work should always precede the course in urinalysis, blood examination, and toxicological analysis, etc., whether given in medical or pharmaceutical colleges.

THE URINE, THE GASTRIC CONTENTS, THE COMMON POISONS, AND THE MILK. By J. W. Holland, M.D., Professor of Medical Chemistry and Toxicology, Jefferson Medical College of Philadelphia. Philadelphia: P. Blakiston's Son & Co.

This, the eighth edition of Holland's well-known work, has been revised and enlarged, and is too well known to require an extended review. It is a very popular book among students and is frequently purchased by them even when it is not the prescribed text-book followed in the course of instruction.

AN AID TO MATERIA MEDICA. By Robert H. M. Dawbarn, M.D. Fourth edition; revised and enlarged by Eden V. Delphey. New York: The Macmillan Company, 1908. $1.75 net.

This is a compilation of the strength and dosage of official preparations; prescription writing; an easy method of writing prescriptions in the metric system; incompatibility; some dangerous abbreviations; table of solubility of chemicals in water and in alcohol; list of the newer unofficial drugs and remedial agents, etc.

While this book contains much useful information, it might be criticized as reminding one of the arrangement and treatment of subjects in a dictionary. It is expected to "prove useful for ready reference, both to the student preparing for examination and to the practitioner."

A COURSE IN QUALITATIVE ANALYSIS OF INORGANIC SUBSTANCES, with Explanatory Notes. By Olin F. Tower, Ph.D., Professor of Chemistry in Adelbert College of Western Reserve University. Philadelphia: P. Blakiston's Son & Co., 1909. $1.00 net.

Nearly every teacher in qualitative analysis seems to find that the books already published on this subject are not quite suited to his courses. The result is that we have very many text-books on qualitative analysis. So long as these books are inexpensive and contain the teacher's carefully revised notes there is good reason for their publication, notwithstanding certain criticisms that might be made. It is very desirable for teachers to develop the subject independently as the discipline is good for them, and this must react to the benefit of the student also.

Tower's qualitative analysis has much to commend it, the student being expected to consult certain standard books in connection with his work, skeleton outlines of procedure usually seen in works of this kind not being given.

PHILADELPHIA COLLEGE OF PHARMACY.

MINUTES OF THE ANNUAL MEETING.

The annual meeting of the members of the Philadelphia College of Pharmacy was held on Monday, March 29, at 4 o'clock P.M., in the library. The President, Howard B. French, presided. Twenty-four members were present. The minutes of the quarterly meeting held December 28, 1908, were read and approved. The minutes of the Board of Trustees for December 1, 1908, January 5, and February 2, 1909, were read by the Registrar, Jacob S. Beetem, and approved.

The President delivered his annual address, from which the following items are abstracted:

PRESIDENT'S ADDRESS.

"As reported one year ago the dynamo was carrying an excessive load, to relieve which the Committee on Property decided to reduce the candle power of the filament lamps in use by a readjustment of the lights, and with care on the part of those connected with the College the consumption of electricity has been regulated, so that the supply is now adequate to the demand, although the lighting of the Annex Laboratory has been added to the present system.

"The increased facilities provided for the department of Botany and Pharmacognosy have been of great benefit to the students, who have taken much greater interest in the work than was anticipated. Forty-three students have taken special instruction in one or more of the following subjects: bacteriology, microscopic examination of blood, systematic botany, and in special investigation as embodied in their theses.

"The Professor of Botany has established on the roof of the Annex Laboratory a botanical garden, which has proven of much use to the students in enabling them to consult authentic material and to make observations of medicinal plants as they grow. In order to increase the facilities of this department the Committee on Property has arranged through subscriptions generously sent to the College for the purpose to erect a moderate sized hot-house so as to preserve plants during the winter months for observation and benefit of the students.

"During the past summer the facilities for instruction in the Microscopical Laboratory have been enlarged by the making of twelve thousand microscopical slides of drugs and pathological specimens.

"The new Annex Laboratory has been completed since the last annual meeting and is fully equipped for instruction. This addition has added greatly to the facilities accorded the students, and has brought the laboratories up to a standard equalled by few and excelled by none. A personal visit to the laboratories is suggested to the members as it will fully repay them for the time thus spent.

"The College buildings are generally in a fair condition, but will need more or less repairs during the coming year.

"Four hundred and forty-one students are in attendance at this

session. They are doing excellent work and as graduates no doubt will be a credit to the College.

"There is a slight increase in the number of members of the College over last year. Two members have resigned, and one has died.

"The College has always taken an active interest in the revision of the United States Pharmacopœia, and for many years a permanent committee have had charge of the work in this direction. This committee, composed of fifteen members, it is hoped will be in position to render material assistance when the convention assembles in 1910 to revise the Pharmacopœia. The reports previously submitted by this committee have always been appreciated and considered of material importance.

"The Alumni Association has, as usual, been most active in behalf of its Alma Mater and with its strong and aggressive methods it means continued success for the College.

"In closing, the President expresses his appreciation of the kindly co-operation of all his associates and hopes that unity of action and earnest effort on the part of all the membership and the faculty will be extended to him and his fellow officers in promoting the continued prosperity of the College."

REPORTS OF COMMITTEES.

PUBLICATION COMMITTEE.—A detailed report of the receipts and expenses of the committee was given, the balance on hand being slightly increased over that of last year. The advertising pages of the JOURNAL continue to maintain the high standard as for years past and have received very favorable commendation. The usual appropriation was made to cover the cost of copies furnished to members and for exchanges.

EDITOR'S REPORT.—The editor gave a summary of the contents of the JOURNAL. Sixty-two papers have been published, forty-four of which were original contributions to the JOURNAL. These papers were contributed by forty-four authors, some of whom contributed more than one paper. Full reports of the annual meetings of the American Pharmaceutical Association, the British Pharmaceutical Conference, and the Pennsylvania Pharmaceutical Association, together with abstracts of papers presented at these meetings, have been published, as also reports of the annual meeting of the American Medical Association, National Wholesale Druggists' Association, and items relating to the N. A. R. D. and W. O. N. A. R. D.

The Quarterly Review of the advances in pharmacy and allied branches by M. I. Wilbert constitutes a valuable feature of the JOURNAL, giving among other things an abstract of the work abroad, besides the meetings of the College and Board of Trustees and the pharmaceutical meetings, have been regularly recorded.

COMMITTEE ON PHARMACEUTICAL MEETINGS.—This report was read by William McIntyre, in which it was stated that eight meetings were held during the year and that a large number of papers were contributed by members as well as some non-members. The meetings have been well attended and the interest well maintained by discussions on the various papers presented. A variety of subjects were considered, ranging all the way from the work of the Council on Pharmacy and Chemistry of the American Medical Association to ampuls and the cultivation of medicinal plants. The October meeting was especially interesting because of the fine display of objects of historical interest belonging to the College. Legislative matters were largely discussed at the November and December meetings. The minutes of the meetings have been regularly published in the AMERICAN JOURNAL OF PHARMACY and reports of them have been given in the leading pharmaceutical periodicals.

CURATOR'S REPORT.—Joseph W. England stated that the Museum was in excellent condition and has received a number of accessions during the year. Additional case room in the gallery of the Museum is needed for the display of the historical collection, and also for the general collections of the Museum. The various collections of the College were utilized for exhibition purposes at the City Hall during Founders' Week in October last and excited very general interest.

LIBRARIAN'S REPORT.—Thomas S. Wiegand stated that two hundred bound volumes were added during the year, and a large number of pamphlets. The cases in the library have been numbered and the contents of each case noted. The library has been much more used the past year than formerly, both by students and members as well as those not associated with us. This is probably due to the fact that the index to the various libraries in the city has been circulated, enabling those who wish to refer to different periodicals to know where to find them.

The COMMITTEE ON NOMINATIONS presented their report containing the names of the various nominees for offices, trustees, and committees.

The COMMITTEE ON LEGISLATION.—M. N. Kline reported that

the committee was co-operating with the Committee on Legislation of the Pennsylvania Pharmaceutical Association and had introduced into the State Legislature two bills,—first, a bill still further to regulate and restrict the sale of cocaine, amending the law of 1903 so that a strict account of all transactions by wholesalers should be made, and a quarterly report made to the State Pharmaceutical Board, also imposing a penalty upon all who had cocaine or any of its preparations in their possession unless procured upon the prescription of a physician, dentist, or veterinarian. Also, a bill regulating the sale of drugs and medicines, conforming largely to the provisions of the Federal Act except that U.S.P. and N.F. preparations do not require statements on the label as to contents of alcohol and narcotics provided for in the Federal Law, and also provided that the official preparations of opium, iodine, peppermint, camphor, ginger, and ethyl nitrite shall not be permitted to be sold of any different standard, or strength, quality, or purity than that given in the U. S. P. This bill has passed the House, and is now in the Senate. Both of these bills have been held back because of the disposition not to grant an appropriation to the Pharmacy Board in order to carry out the provision of the law. A bill had been introduced through a member of the Pharmaceutical Examining Board providing for a fifteen hundred dollar per annum salary for each member of the Examining Board, and providing for a license fee of two dollars per annum for each drug store in the State, and providing for a revocation of that license upon conviction of a druggist by the Court of the violation of any pharmacy law now in existence or to be passed in the future. This bill is so sweeping in its provisions, and introduced at so late a day in the session, that it is not likely to be passed, and some of its provisions will certainly be strongly objected to by druggists of this State when it becomes known.

DONATIONS WERE RECEIVED from the following: Paul B. Anspach, of Easton, Pa., gave twenty-eight bound volumes of the AMERICAN JOURNAL OF PHARMACY, and twenty-two volumes of the *Proceedings of the American Pharmaceutical Association;* J. C. De LaCour, of Camden, N. J., gave sixty volumes consisting mainly of books on chemical and pharmaceutical subjects; William M. Morrison, of Roxborough, gave a copy of an old English work published in London in 1693, called *Salmon's English Physician or the Druggist's Open Shop,* a copy of Parrish's *Practical Pharmacy*

(5th Edition), and an ancient prescription balance and weights; and the American Filter and Cooler Company of Shamokin, Pa., gave a large combined Montanye's Filter, Cooler and Sterilizer. The thanks of the College were voted to all the donors.

Professor Remington reported that some of the former students and friends of the late Professor Edward Parrish desired to present a portrait of him to the College, and suggested that an appropriate time would be at the coming commencement in May.

Acknowledgments of having received the certificates of Honorary Membership to which they had been elected September 28, 1908, have been received from Henry Greenish, B. T. Galloway, W. A. Noyes, Edward Strasburger, William Trelease, and Henry G. Smith.

The President made the following appointments: Delegates to the meeting of the Pennsylvania Pharmaceutical Association meeting at Bedford Springs, C. B. Lowe, M. N. Kline, William McIntyre, Charles H. LaWall, H. L. Stiles, Joseph P. Remington, and Charles Leedom; delegates to the New Jersey Pharmaceutical Association meeting at Lake Hopatcong, George M. Beringer, C. B. Lowe, Henry Kraemer, Joseph P. Remington, and H. L. Stiles; and reappointed the Committee on By-Laws, George M. Beringer, Joseph W. England, C. A. Weidemann.

The election of officers, trustees, and committees being now in order, Messrs. E. Fullerton Cook and Jacob S. Beetem were appointed tellers, who, after a ballot was taken, reported the re-election of Howard B. French, President; Mahlon N. Kline, First Vice-President; Richard V. Mattison, Second Vice-President; Richard M. Shoemaker, Treasurer; A. W. Miller, Corresponding Secretary; C. A. Weidemann, Recording Secretary; Joseph W. England, Curator; Thomas S. Wiegand, Librarian; Henry Kraemer, Editor. Trustees for three years: Walter A. Rumsey, Warren H. Poley, and Jacob M. Baer. Publication Committee: Samuel P. Sadtler, Henry Kraemer, Joseph W. England, Martin I. Wilbert, Joseph P. Remington, Miss Florence Yaple, and Charles H. LaWall. Committee on Pharmaceutical Meetings: Joseph P. Remington, C. B. Lowe, Henry Kraemer, W. L. Cliffe, and William McIntyre.

C. A. WEIDEMANN, M.D.,
Recording Secretary.

ABSTRACT FROM THE MINUTES OF BOARD OF TRUSTEES.

December first, 1908.—Fourteen members present. Committee on Property submitted a design for a bronze sign to be placed on

the front of the building. The Chairman, Mr. French, also reported that he has received six hundred and ninety-one dollars from friends of the College as a contribution towards erecting a hot-house on the roof of the new laboratory building. The committee was then authorized to have a hot-house erected for the use of the botanical department. The question of students' issuing elaborate invitations to Commencement exercises was brought to the attention of the Board, and it was suggested that a uniform invitation be issued by the College. A committee, consisting of the President and Dean, was appointed to have a plate engraved for that purpose. W. L. Schwartz was elected an active member of the College and Feliciano Paterno as an associate member.

January fifth, 1909.—Eleven members present. Regrets were received from Messrs. Lemberger, Meyer, Rumsey, and Pile. Committee on Examination reported that David J. Jones had satisfactorily passed his examination and a certificate of proficiency in chemistry was ordered issued to him. Committee on Property submitted another design for a bronze sign to be placed on the front of the building. After a general discussion, the matter was referred to the committee with the power to act. Professor Remington reported that he had received a communication from Mrs. Emma N. Shinn and her daughter, Mrs. Anna Shinn Maier, offering the College $200 in lieu of a scholarship. The offer was accepted as a memorial to our late Treasurer, James T. Shinn, and the thanks of the Board was extended to the donors. Dr. Francis E. Stewart was elected to active membership and John J. Bridgeman as an associate member.

February second, 1909.—Twelve members present. The E. T. Dobbins Scholarship was awarded after a competitive examination to Walter L. Bischoff. Committee on Alumni drew to the attention of the Board a recent article in the *Alumni Report* in regard to furnishing the lecture room in the Annex Laboratory and stated that $131 had been received and that the active co-operation of the friends of the College, particularly the efforts made by Mrs. F. X. Moerk and the ladies associated with her, had proved of material benefit to the College. A sketch for the Commencement invitation was submitted and after general discussion accepted. Professor Remington stated that the Class Committee was working in hearty accord with the Board in adopting an engraved invitation. It was ordered that each graduate be given ten invitations and those who

wanted more could obtain same at cost. Manuel Zamora, professor in the School of Pharmacy at Manila, was elected to associate membership.

C. A. WEIDEMANN, M.D.,
Recording Secretary.

APRIL PHARMACEUTICAL MEETING.

The stated pharmaceutical meeting of the Philadelphia College of Pharmacy was held Tuesday, April 20, at 3 o'clock, with Warren H. Poley, a member of the Board of Trustees, in the chair.

William G. Toplis, a pharmacist of Germantown, who was formerly employed by the Bureau of Filtration of Philadelphia, read a paper on "The Progress in the Purification of the Drinking Water in Philadelphia" (see page 220). After presenting the paper Mr. Toplis exhibited a chart showing the marked decrease in the number of typhoid cases in the Thirty-third Ward since it began to be supplied with filtered water, on July 15, 1907, as compared with the number of cases during the corresponding weeks in 1906 and 1907. The chart showed that at no time since this Ward began to be supplied with filtered water did the typhoid cases exceed four in number.

Mr. Smith, a chemist employed at the Belmont Filter, spoke of the methods used in determining the purity of the water, and stated that the raw water is examined once a day, and that daily bacteriological examinations and weekly chemical examinations of the filtered water are made. Mr. Smith also stated that there is considerable difference in the working of the preliminary filters owing to the character of the sediment in the water from the different sources, those for the Delaware water working better on account of the coarseness of the sediment. Professor Kraemer stated that when the College Course in Bacteriology was organized some ten years ago the source of the chromogenic and intestinal bacteria as well as other micro-organisms which were studied was the tap water, and that the number was frequently very large, whereas now the whole number of organisms is frequently as low as 25 per c.c. Mr. Toplis stated that these figures corroborated those given by the city bacteriologists.

George M. Beringer read a paper on "Barbados Aloes, a Misnomer," which he said had been prepared by Messrs. Lehn & Fink for publication in their "Notes on New Remedies," and that an advance copy had been sent to him as chairman of the Committee on

Pharmacopœia of the American Pharmaceutical Association, and probably also as he had touched upon the subject at the meeting of the New Jersey Pharmaceutical Association last year (see page 227).

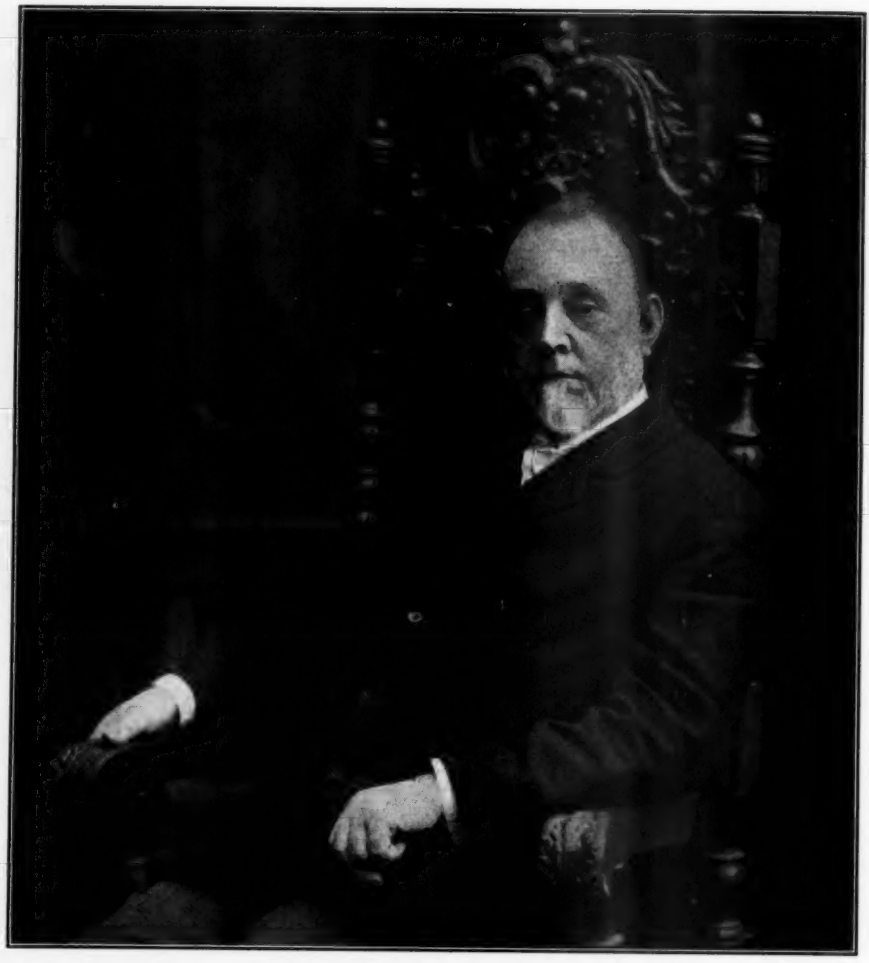
In discussing the paper, Professor Remington said that he had received a copy of the same communication, and that it appeared to contain a misconception, as the word "Barbados" does not appear in either the official definition or description of aloes. He said that the words (Aloe Barbadensis, Aloe Socotrina, Pharm., 1890) are used in the Eighth Revision of the Pharmacopœia merely as a synonym, showing what varieties of aloes were official in the 1890 edition. He then went on to say that the U. S. Pharmacopœia, Eighth Revision, recognizes every variety of aloes answering the official tests for identity and purity, and that while specifying *Aloe vera* as one of the plants yielding the drug it does not specify the geographical source of the drug.

Professor Kraemer said that papers of this kind serve the purpose of calling attention to the difficulties which are experienced in trying to harmonize commercial and trade names with the scientific names given in the Pharmacopœia, and that in the next revision of the Pharmacopœia the commercial varieties should be given in connection with the definition. Professor Kraemer then said that there were several fine specimens of aloes plants in the cactus house at Horticultural Hall, Fairmount Park, some of which were in bloom, including *Aloe vera,* and he also called attention to the aloes plants in the College collection.

In bringing the discussion to a close, Mr. Beringer said that *Aloe vera,* which is given in the U. S. Pharmacopœia as one of the plants from which aloes is derived, is not mentioned by the other Pharmacopœias, while other species, such as the African, are recognized by them but not mentioned in our own Pharmacopœia. He held that the paper reflected the market conditions of the day.

Prof. Charles H. LaWall read a brief paper on "A Method for the Detection of Small Quantities of Capsicum in Ginger Ale and other Preparations of Ginger" (see page 218). In replying to a question Professor LaWall stated that all of the samples of ginger ale examined by him, both imported and domestic, contained capsicum.

FLORENCE YAPLE,
Secretary, *pro tem.*



JACOB HENRY REDSECKER
1839–1909